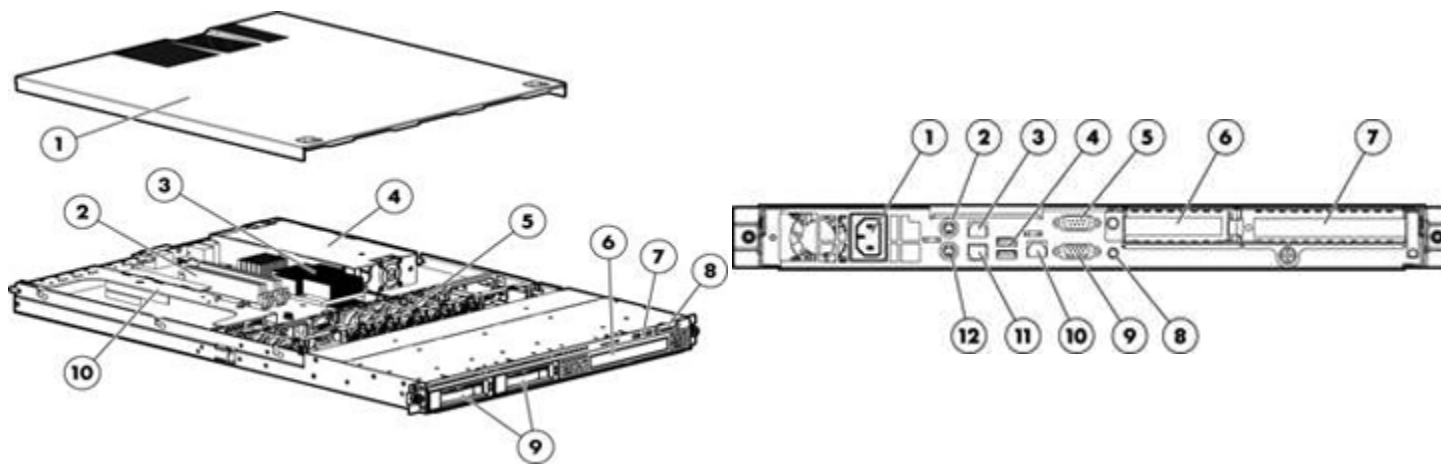


Overview



Front View:

- 1. Cover
- 2. Four PC2-6400 ECC DDR2 Memory Slots
- 3. Processor Socket (Intel® Xeon®, Core™2, Pentium® or Celeron®)
- 4. Power Supply (400 Watt)
- 5. Non Hot Plug Dual Rotor Fans
- 6. Optional 12.7mm DVD-ROM, or DVD-RW Drive for 2 HDD models and optional 9.5mm DVD-ROM, or DVD combo drive for 4-HDD model
- 7. Two upfront USB connectors
- 8. Power Button, UID Button, and Front LED Indicators
- 9. Support for up to four Hot Plug SATA or SAS Hard Drives
- 10. Two PCI-Express Slots (2 PCI-Express x8 connectors standard)

Rear View:

- 1. Power supply
- 2. Mouse connector
- 3. NIC 2 Port
- 4. USB connectors (2)
- 5. Serial connector
- 6. PCI Express expansion slot 5, low-profile, half-length
- 7. PCI Express expansion slot 4, (optional PCI-X, full-length)
- 8. UID button/LED
- 9. Video connector
- 10. Dedicated Integrated Lights-Out 2 (iLO 2) management port (optional)
- 11. NIC 1 Port / Shared iLO 2 Management Port
- 12. Keyboard connector

What's New

- New Quad-Core Intel Xeon processors with up to 12 MB L2 cache for 1333MHz Front Side Bus
- Support for low-cost Intel Celeron 440 processor

At a Glance

The HP ProLiant DL320 G5p Server is an enterprise rack-optimized server at an entry level price. The highly manageable 1 processor, 1U server is ideal for single-application IT infrastructure, web and edge-of-network applications. The remote console and virtual KVM offered by the embedded iLO-2, coupled with the management features of SIM and deployment capabilities of SmartStart and other ProLiant Essentials software, give the DL320 G5p enterprise-class management features. Optional upgrades provide support for hot-plug SAS drives and/or up to 4 SAS or SATA drives, and gives the DL320 G5p the flexibility to meet the needs of your datacenter. Plus, you get the cost-effective solution of a single-processor platform with the performance advantages of dual-core or quad-core.

Processor:

- Quad-Core Intel® Xeon® 3300 processor sequence



### Overview

- Quad-Core Intel® Xeon® 3200 processor sequence
- Dual-Core Intel® Xeon® 3100 processor sequence
- Dual-Core Intel® Xeon® 3000 processor sequence
- Dual-Core Intel® Core™2 E4600 processor
- Dual-Core Intel® Pentium® E2160 processor
- Single-Core Intel® Celeron® 440 and 420 processors
- Intel® 3210 Chipset with up to 1333MHz Front Side Bus (FSB)

### Memory:

- Supports up to 8 GB of PC2-6400 (800 MHz) Unbuffered DDR2 ECC SDRAM Memory
- 4 DIMM sockets

### Storage Controller:

- 4 Port SATA Controller with RAID 0/1 support

### Internal Drive Support:

- Up to four 3.5" (Large Form Factor) SATA or SAS hard drives
  - Two drive cage standard. Optional 4 HDD cage upgrade kit
  - SAS drives require optional SAS Host Bus Adapter (HBA) or Smart Array Controller
  - Optional hot plug hard drive configuration
- Internal storage capacity of up to 3.0TB (4 x 750 GB SATA hard drives) with optional 4HDD cage
- Optional DVD, DVD Combo or DVD-RW drive (depending on 2 or 4 HDD model)

### Network Controller:

- Embedded NC326i Dual Port Gigabit Server Adapter

### Expansion Slots:

- Two total slots:
  - (1) Full length PCI Express x8 slot (x8 connector)
    - Can be replaced with a full-length 64-bit /133MHz PCI-X slot
  - (1) Half-length, low-profile PCI Express x1 slot (x8 connector)

### USB 2.0 Ports:

- Up to 5 Total: (2) front; (1) internal (optional); (2) rear accessible ports
- Internal USB port (optional) for flexible storage, security, or USB drive key deployment

### Management:

- HP Insight Control Environment server management software
- Integrated Lights-Out 2 featuring Integrated Remote Console with KVM over IP performance over shared network access
- HP ProLiant Essentials Foundation Pack, including HP Systems Insight Manager and SmartStart
- Front Panel status LEDs including system health and UID

### Form Factor:

- 1U (1.70" / 4.32 cm) Rack Mount Chassis
- 26.85" (68.20 cm) Deep
- New fixed, mounting rails included with all models

### Warranty:

- This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and parts repair is available for three years Next Business Day, with one year on-site support from date of purchase. Support for software and initial setup is available for 90 days



### Overview

from date of purchase. Expanded support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. SATA hard drives have a one-year warranty.

**NOTE:** Server Warranty includes three year parts, one year labor, and one year on-site support with next business day response. Additional information regarding worldwide limited warranty and technical support is available at:

<http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Standard Features

**NOTE:** For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: <http://h71028.www7.hp.com/ERC/downloads/4AA1-5500ENW.pdf>.

**NOTE:** For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

<b>Processor</b> One of the following depending on Model	Quad-Core Intel® Xeon® processor X3360 (2.83GHz, 12MB L2 cache, 95 Watts, 1333MHz Front Side Bus (FSB)) <b>NOTE:</b> Available via CTO only.
	Quad-Core Intel® Xeon® processor X3350 (2.66GHz, 12MB L2 cache, 95 Watts, 1333MHz FSB) <b>NOTE:</b> Available via CTO only.
	Quad-Core Intel® Xeon® processor X3320 (2.50GHz, 6MB L2 cache, 95 Watts, 1333MHz FSB)
	Quad-Core Intel® Xeon® processor X3220 (2.4GHz, 8MB L2 cache, 95 Watts, 1066MHz FSB) <b>NOTE:</b> Available via CTO only.
	Quad-Core Intel® Xeon® processor X3210 (2.13GHz, 8MB L2 Cache, 95 Watts, 1066MHz FSB)
	Dual-Core Intel® Xeon® processor E3110 (3.0GHz, 6MB L2 cache, 65 Watts, 1333MHz FSB)
	Dual-Core Intel® Xeon® processor 3075 (2.66GHz, 4MB L2 cache, 65 Watts, 1333MHz FSB)
	Dual-Core Intel® Xeon® processor 3065 (2.33GHz, 4MB L2 Cache, 65 Watts, 1333MHz FSB) <b>NOTE:</b> Available via CTO only.
	Dual-Core Intel® Core™2 processor E4600 (2.4GHz, 2MB L2 cache, 800MHz FSB) <b>NOTE:</b> Available via CTO only.
	Dual-Core Intel® Core™2 processor E4400 (2.0GHz, 2MB L2 cache, 800MHz FSB) <b>NOTE:</b> Available via CTO only.
	Dual-Core Intel® Pentium® processor E2160 (1.80GHz, 1MB L2 cache, 800MHz FSB) <b>NOTE:</b> Available via CTO only.
	Single-Core Intel® Celeron® processor 440 (2.00GHz, 512KB L2 cache, 800MHz FSB) <b>NOTE:</b> Available via CTO only.
	Single-Core Intel® Celeron® processor 420 (1.60GHz, 512KB L2 cache, 800MHz FSB) <b>NOTE:</b> Available via CTO only.

<b>Cache Memory</b> One of the following depending on Model	12 MB L2 Cache <b>NOTE:</b> For Models with Intel® Xeon® processor X3360 and X3350.
	8 MB L2 Cache <b>NOTE:</b> For Models with Intel® Xeon® processor X3220 and X3210.
	6 MB L2 Cache <b>NOTE:</b> For Models with Intel® Xeon® processor X3320 and E3110.
	4 MB L2 Cache <b>NOTE:</b> For Models with the Intel® Xeon® processor 3075 and 3065.
	2 MB L2 Cache <b>NOTE:</b> For Models with the Intel® Core2 processor E4600 and E4400.
	1 MB L2 Cache <b>NOTE:</b> For Models with the Intel® Pentium processor E2160.
	512 KB L2 Cache <b>NOTE:</b> For Models with the Intel® Celeron processor 440 and 420.

<b>Chipset</b>	Intel® 3210 Chipset
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<b>Memory Protection</b>	ECC
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Standard Features

<b>Memory</b> One of the following depending on Model	Type	PC2-6400 (800MHz) Unbuffered ECC DDR2 SDRAM Interleaving optional (Enabled when DIMMs populated in pairs)	
	DIMM Sockets	4	
	Standard - Xeon E3110 and Xeon 3075 Models	1 GB (1 x 1 GB)	
	Standard - Xeon X3320 and Xeon X3210 Models	2 GB (2 x 1 GB)	
	Maximum Memory	8 GB	

<b>Network Controller</b>	Embedded NC326i Dual Port Gigabit Server Adapter
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Expansion Slots

Expansion Slots #	Technology	Bus Width ***	Connector Width	Bus Number*	Device No.**	Form Factor	Notes
5 (Standard)	PCIe	x1	x8	10	0	Low profile (half length, half height) slot	
4 (Standard)	PCIe	x8	x8	21	0	Full length, full height slot	This PCIe slot can be replaced with optional PCI-X slot below
4 (Optional)	PCI-X (133MHz, 3.3Volt)	64-bit	Not applicable	24	4	Full length, full height slot	

\* Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number.  
\*\* Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).  
\*\*\* Indicates the number of physical electrical lanes running to a PCI-e connector.

<b>Storage Controllers</b>	Integrated Intel® 82801IR Serial ATA Host Controller with RAID 0/1 support. Hot Plug SAS and SATA controllers available via PCI card option.
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<b>Storage</b>	Optical Drive	Optional 2 HDD Models: 12.7mm DVD-ROM, or DVD-RW Drive 4 HDD Models: 9.5mm DVD-ROM, or DVD combo drive	
	Hard Drives One of the following depending on Model	Hard Drives - Hot Plug SATA/SAS	Up to 2 or 4 hot plug SATA or SAS 3.5" drives <b>NOTE:</b> Hot-plug and/or SAS support requires optional HBA or Controller card.

Standard Features

Maximum Internal Storage Type	SATA (2HDD models - standard)	1.5TB	2 x 750 GB SATA
	SATA (4HDD models - requires optional 4HDD cage)	3.0TB	4 x 750 GB SATA
	SAS (2HDD models standard - requires optional PCI controller)	600GB	2 x 300 GB SAS
	SAS (4HDD models - requires optional 4HDD cage and PCI controller)	1.2TB	4 x 300 GB SAS

Interfaces	Serial	1	
	USB 2.0	5 (2 front, 1 internal (optional), 2 rear)	<b>NOTE:</b> Please see the following URL for additional information regarding USB support: <a href="http://h18004.www1.hp.com/products/servers/platforms/usb-support.html">http://h18004.www1.hp.com/products/servers/platforms/usb-support.html</a>
	Graphics	1 (rear)	
	Keyboard	1	
	Mouse	1	
	Network RJ-45	2 (NIC 1 shared iLO 2 port)	
	Dedicated iLO 2 remote management port	1 (optional)	

Graphics	Integrated ATI ES1000, 32 MB video standard	
	<ul style="list-style-type: none"><li>16 bit color: maximum resolution of 1600 x 1200</li><li>32 bit color: maximum resolution of 1280 x 1024</li></ul>	
	<b>NOTE:</b> Maximum resolution available via iLO 2 remote console is 1280 x 1024.	

Form Factor	Rack (1U), (1.70 in/4.32 cm), 26.85" deep
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Standard Features

HP Insight Control Management Suites	<p>HP Insight Control Environment delivers foundation management, including remote monitoring, hardware resource deployment, health monitoring, software version control, performance monitoring, vulnerability scanning and patch management, and power management.</p> <p>HP Insight Control Environment installs and licenses the following components by default using a wizard-based integrated installer:</p> <ul style="list-style-type: none"><li>• HP Systems Insight Manager</li><li>• HP iLO Advanced Pack</li><li>• HP Rapid Deployment Pack</li><li>• HP Insight Power Manager</li><li>• HP Performance Management Pack</li><li>• HP Vulnerability and Patch Management Pack</li></ul> <p>Additional ProLiant Essentials software and management tools included on the Insight Control Management kit can be installed manually</p> <ul style="list-style-type: none"><li>• HP Server Migration Pack - Universal Edition</li><li>• HP Open Service Event Manager</li><li>• HP Instant Support Enterprise Edition</li></ul> <p><b>NOTE:</b> Server Migration Pack - Universal Edition can be installed from the SMP Universal CD included in the Insight Control Management media kit.</p> <p><b>NOTE:</b> For additional product and licensing information about HP Insight Control Environment, visit: <a href="http://www.hp.com/go/ice">http://www.hp.com/go/ice</a>.</p> <p>HP Insight Control Environment for Linux (ICE-Linux) provides comprehensive discovery, imaging &amp; deployment, monitoring, and management for Linux-based ProLiant server platforms. Built on the industry-leading HP Systems Insight Manager framework, this solution integrates open source technology with experience leveraged from HP's Linux products in HP ICLE and HP XC Clusters, while providing paths to the future with developing management technologies.</p> <p>HP Insight Control management suites and most HP ProLiant Essentials include a one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: <a href="http://www.hp.com/services/insight">http://www.hp.com/services/insight</a>.</p>	
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Server Management Stand Alone Software Product - ProLiant Essentials	HP Systems Insight Manager	HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible standards-based environment to centrally manage servers, storage and other infrastructure devices, (both HP and non-HP) across multiple operating system platforms.
	ProLiant Essentials Rapid Deployment Pack	Rapid Deployment Pack (RDP) extends HP Systems Insight Manager with a complete deployment solution for HP ProLiant servers. RDP provides a central location to configure server hardware, deploy Windows, Linux and VMware ESX operating environments and install HP ProLiant Support Pack drivers using images and scripted profiles. For more information, visit: <a href="http://www.hp.com/go/rdp">http://www.hp.com/go/rdp</a> .
	ProLiant Essentials Server Migration Pack - Universal Edition	Upgrading, replacing, or virtualizing your existing server? Effortlessly transition to new virtual or physical HP ProLiant servers or BladeSystem with automated, accurate and affordable migration of OS, application and data. SMP Universal automates the manual processes required for migrating servers between physical or virtual platforms, whether migrating to VMware or Microsoft virtual machines. SMP Universal allows all of the following migrations: <ul style="list-style-type: none"><li>• physical to ProLiant</li><li>• physical to virtual</li><li>• virtual to virtual</li><li>• </li></ul>





Standard Features

- virtual to ProLiant

**NOTE:** For more information, visit: <http://www.hp.com/go/migrate>.

ProLiant Essentials Performance Management Pack	Performance Management Pack (offered exclusively through the Insight Control suites) - a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources
Integrated Lights-Out Advanced Pack	Upgrades the iLO 2 processor with comprehensive remote control including Virtual KVM remote graphical console, enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, and enterprise security (directory services and two-factor authentication).
Integrated Lights-Out Select Pack	Upgrades the iLO 2 processor with enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, historical power reporting, power capping and enterprise security (directory services and two-factor authentication) for servers managed using remote consoles available in iLO 2 Standard and iLO 2 Standard Blade Edition.

**NOTE:** Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to: <http://www.hp.com/servers/proliantessentials> or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

Core Infrastructure Management

SmartStart	SmartStart is a tool that simplifies server setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at: <a href="http://www.hp.com/servers/smartstart">http://www.hp.com/servers/smartstart</a> . SmartStart version supported (minimum): SmartStart 7.90
Insight Management Agents	The Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers.  Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the ProLiant Essentials Rapid Deployment Pack.  For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at: <a href="http://www.hp.com/servers/manage">http://www.hp.com/servers/manage</a> .
Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at: <a href="http://www.hp.com/go/subscriberschoice">http://www.hp.com/go/subscriberschoice</a> and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.
ProLiant Support Packs and ROMPaq, software	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available through ProLiant Support Packs the ProLiant Essentials Rapid Deployment Pack, SmartStart or downloaded from software and drivers download pages website at: <a href="http://www.hp.com/go/support">http://www.hp.com/go/support</a> .





## Standard Features

### HP Serviceguard for Linux (SGLX)

HP Serviceguard for Linux is a high availability clustering solution designed to protect applications and services from a wide variety of software and hardware failures, monitoring the health of each server (node) and quickly responding to failures such as those that affect system processes, system memory, LAN media and adapters, and application processes.

The following is a quick summary of HP Serviceguard for Linux features and support. For the most recent list of Linux distributions & kernels, servers and storage supported with Serviceguard for Linux, see the Serviceguard for Linux Certification Matrix, available at: <http://www.hp.com/go/sglx/info>.

- Supported Linux Distributions:
  - Red Hat EL 4
  - Red Hat EL 5
  - SUSE SLES10
- Supported Server Platforms
  - HP Integrity
  - HP ProLiant
  - Selected 3rd party x86 class servers
- Physical and virtual server support
- Application Integration Toolkits
  - Oracle Single Instance Database
  - Serviceguard Extension for SAP for Linux (SGeSAP/LX)
  - Other Application Integration Toolkits for sendmail, MySQL and more are free to download at: <http://www.hp.com/go/softwaredepot/ha>
- Disaster Tolerant Solutions
  - Serviceguard for Linux Extended Distance Cluster (XDC) extends cluster distances up to 100 km, utilizes software RAID mirroring for data replication and is storage array independent
  - HP StorageWorks XP/EVA Cluster Extension Software for Linux (CLX) works seamlessly with HP Serviceguard for Linux, HP StorageWorks Continuous Access, and HP Disk Arrays to automate failover and failback between sites
- Software updates are distributed by HP Services to customers with support contracts

**NOTE:** For additional information on HP Serviceguard for Linux, visit: <http://www.hp.com/go/sglx> or see the HP Serviceguard for Linux QuickSpecs.

**NOTE:** HP Serviceguard for Linux products for HP ProLiant and select 3rd party x86 class servers include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: <http://www.hp.com/services/swsupport>.

### Industry Standard Compliance

- ACPI 2.0
- PCI 3.0 Compliant
- PXE Support
- WOL Support
- Microsoft® Logo certifications
- USB 2.0
- IPMI 2.0

**NOTE:** iLO 2 management processor monitors fans, temperature sensors, power supply sensors and Vrms without having the System Management Driver loaded. In addition to reporting sensor status from all iLO 2 interfaces, the management processor also reports sensor status to the operating system through an IPMI 2.0 specified interface.

Standard Features

**Remote Management**    Integrated Lights Out 2 (iLO2) Standard Management:

- Virtual Text Remote Console (pre-OS only)
- Remote Serial Console
- Virtual Power Button Control
- Virtual Unit ID control
- Integrated Remote Console
- Dedicated & full function shared network connectivity
- Embedded system health
- Browser, command line and scripted access
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) and Secure Shell security (SSH)
- OS independent hardware health status
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privilege

**Intelligent Manageability**

Automatic Server Recovery (ASR)  
iLO 2 Advanced Pack (optional)  
HP Systems Insight Manager  
Integrated Management Log  
Drive Parameter Tracking (with Smart Array Controllers)  
Dynamic Sector Repairing (with Smart Array Controllers)  
Pre-Failure Warranty (covers processors, SAS hard drives, and memory)  
BIOS Serial Console  
Front and Rear Unit ID (UID) button/LED

**Security**

Power-on password  
Keyboard password  
USB Port control  
Removable optical drive assembly (optional)  
Removable DVD-ROM Drive Assembly (optional)  
Dedicated iLO2 port (optional)  
Administrator's password

**Server Power Cords**

North America	One 6' Highline (IEC-IEC) power cord ships standard
Japan	One 6' Highline (IEC) power cord and one 6' Lowline power cord ship standard
ROW	One 6' Highline (IEC) power cord ships standard

**NOTE:** HP ProLiant DL320 G5p servers ship standard worldwide with a C13 to C14 2M Highline jumper cord. Japanese models also include a 2M Lowline power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific cord. Please see the following power cord matrix: <http://www.hp.com/go/powercordmatrix>.

**Power Supply**

Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant

**UPS and PDU Power Cord Matrix**

Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units:  
<http://h18004.www1.hp.com/products/servers/proliantstorage/power-protection/index.html>



### Standard Features

<b>System Fans</b>	3 dual rotor fans ship standard with X3360, X3350, X3320, and E3110 models. 4 dual rotor fans ship standard with all other models (e.g. X3220, X3210, 3075, 3065, E4600, E4400, E2160, 440 and 420 models).
<b>Ultra Thin Rack Deployment Overview</b>	For the Ultra Thin Rack Deployment Overview, including best practices for the HP ProLiant DL320 G5p, please see the following URL: <a href="http://www.hp.com/servers/dl320-g5">www.hp.com/servers/dl320-g5</a> .
<b>Required Cabling</b>	For required cabling information, refer to the Web site at: <a href="http://www.hp.com/servers/dl320-g5">www.hp.com/servers/dl320-g5</a> .
<b>OS Support</b>	<p>Microsoft Windows Server 2003 (web, standard, and enterprise editions; standard and enterprise editions for 64-bit extensions)  Microsoft Windows Small Business Server 2003, R2  Microsoft Windows Server 2008  Red Hat Enterprise Linux  SUSE Linux Enterprise Server</p> <p><b>NOTE:</b> Support differences will exist between the SATA and SAS configurations.  <b>NOTE:</b> For a more complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at: <a href="http://www.hp.com/go/supportos">http://www.hp.com/go/supportos</a>.  <b>NOTE:</b> For an up-to-date listing of the latest software and drivers available for your server, please select your server: <a href="http://h20000.www2.hp.com/bizsupport/TechSupport/Product.jsp?lang=en&amp;cc=us&amp;taskId=135&amp;prodTypeId=15351&amp;prodCatId=241435">http://h20000.www2.hp.com/bizsupport/TechSupport/Product.jsp?lang=en&amp;cc=us&amp;taskId=135&amp;prodTypeId=15351&amp;prodCatId=241435</a>.  <b>NOTE:</b> For more Linux OS support &amp; certification information, please visit our the ProLiant &amp; BladeSystem Server Linux matrix  <a href="http://h18004.www1.hp.com/products/servers/linux/hpLinuxcert.html">http://h18004.www1.hp.com/products/servers/linux/hpLinuxcert.html</a>  <b>NOTE:</b> For more complete and up-to-date information on how to buy server operating systems from HP please visit the OS product site at:  <a href="http://h18004.www1.hp.com/products/servers/software/OEM.html">http://h18004.www1.hp.com/products/servers/software/OEM.html</a></p>
<b>Rack Airflow Requirements</b>	<p><b>Rack 10000 series Cabinets</b></p> <p>The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.</p> <p><b>CAUTION:</b> If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:</p> <ul style="list-style-type: none"> <li>• <b>Front and rear doors:</b> If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).</li> <li>• <b>Side:</b> The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches)</li> </ul> <p><b>CAUTION:</b> Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.</p> <p><b>NOTE:</b> For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: <a href="http://h18004.www1.hp.com/products/servers/proliantdl320/index.html">http://h18004.www1.hp.com/products/servers/proliantdl320/index.html</a>.</p>

### Standard Features

#### Rack Kit

The DL320 G5p Fixed Rail System supports installation in racks with square or round mounting holes (including Compaq/HP 7000, 9000, 10000 and HP series), with an adjustment range of 24" - 36". Installation into Telco 2 post, and 4 post, or threaded holes racks requires a 3rd party option kit. Go to: [www.racksolutions.com](http://www.racksolutions.com) for more information.

#### HP Factory Express Capabilities

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAXxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to: <http://www.hp.com/go/factory-express>.

#### Service and Support

HP Care Pack Services provide total care and support expertise with committed response times designed to meet your IT and business needs.

HP Care Pack services include coverage for the HP branded hardware options qualified for the server that are purchased at the same time or afterward and internal to the enclosure. It also includes the 22-inch and smaller external monitors and tower UPS options up to 3kVA. These items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included and standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

To fully capitalizing on your HP ProLiant servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of support solutions provides a range of support services designed to meet the varying needs of your business. Whether an SMB, or large global corporation, HP has ProLiant server support offers to help you speedily deploy and maximize system uptime.

**Recommended Service** - simplify ProLiant solution implementation, maintenance, and management.

- **Support** - 3 Year 9x5 Next Business Day coverage, excluding HP holidays only
- **Deployment Service** - HW Installation only

**Enhanced Service** - optimize service level to increase IT performance and availability.

- **Support** - 3 Year 13x5 Same Business Day, 4-Hour response coverage only
- **Deployment Service** - Installation and Start up only

Refer to the information on the Installation of a ProLiant on the ProLiant Data Sheet; to be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

**NOTE:** For a complete listing of service offerings and information visit:

<http://www.hp.com/services/proliantservices>

<http://www.hp.com/go/proliant/carepack>

Models

**NOTE:** For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

<b>DL320 G5p X3320 2GB</b> 445431-xx1	<b>Processor</b>	Quad-Core Intel® Xeon® processor 3320 (2.50GHz, 6MB L2 cache, 95 Watts, 1333MHz FSB)
	<b>Cache Memory</b>	6MB L2 Cache
	<b>Chipset</b>	Intel® 3210 Chipset
	<b>Memory</b>	2 GB (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	<b>Network Controller</b>	Embedded NC326i Dual Port Gigabit Server Adapter
	<b>Storage Controller</b>	Intel® 82801IR Integrated Serial ATA Host Controller
	<b>Hard Drives</b>	None ship standard
	<b>Internal Storage</b>	SAS: 1.2TB maximum; SATA: 3.0TB maximum <b>NOTE:</b> SAS requires optional PCI Controller.
	<b>Optical Drive</b>	Optional
	<b>Power Supply</b>	Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant
	<b>Form Factor</b>	Rack (1U), (1.70 in/4.32 cm)

<b>DL320 G5p X3210 2GB</b> 445434-xx1	<b>Processor(s)</b>	Quad-Core Intel® Xeon® processor 3210 (2.13GHz, 8MB L2 cache, 95 Watts, 1066MHz FSB)
	<b>Cache Memory</b>	8MB L2 Cache
	<b>Memory</b>	2 GB (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	<b>Network Controller</b>	Embedded NC326i Dual Port Gigabit Server Adapter
	<b>Storage Controller</b>	Intel® 82801IR Integrated Serial ATA Host Controller
	<b>Hard Drives</b>	None ship standard
	<b>Internal Storage</b>	SAS: 1.2TB maximum; SATA: 3.0TB maximum <b>NOTE:</b> SAS requires optional PCI Controller.
	<b>Optical Drive</b>	Optional
	<b>Power Supply</b>	Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant
	<b>Form Factor</b>	Rack (1U), (1.70 in/4.32 cm)

<b>DL320R05p E3110 1GB</b> 445432-xx1	<b>Processor(s)</b>	Dual-Core Intel® Xeon® processor E3110 (3.0GHz, 6MB L2 cache, 65 Watts, 1333MHz FSB)
	<b>Cache Memory</b>	6MB L2 Cache
	<b>Memory</b>	1 GB (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	<b>Network Controller</b>	Embedded NC326i Dual Port Gigabit Server Adapter
	<b>Storage Controller</b>	Intel® 82801IR Integrated Serial ATA Host Controller
	<b>Hard Drives</b>	None ship standard
	<b>Internal Storage</b>	SAS: 1.2TB maximum; SATA: 3.0TB maximum <b>NOTE:</b> SAS requires optional PCI Controller.
	<b>Optical Drive</b>	Optional
	<b>Power Supply</b>	Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant
	<b>Form Factor</b>	Rack (1U), (1.70 in/4.32 cm)

Models

DL320 G5p X3075 1GB 445433-xx1	Processor	Dual-Core Intel® Xeon® processor 3075 (2.66GHz, 4MB L2 cache, 65 Watts, 1333MHz FSB)
	Cache Memory	4 MB L2 Cache
	Chipset	Intel® 3210 chipset
	Memory	1 GB (Standard) to 8 GB (Maximum) of ECC PC2-6400 Unbuffered DDR2 SDRAM Memory
	Network Controller	Embedded NC326i Dual Port Gigabit Server Adapter
	Storage Controller	Intel® 82801IR Integrated Serial ATA Host Controller
	Hard Drives	None ship standard
	Internal Storage	SAS: 1.2TB maximum; SATA: 3.0TB maximum <b>NOTE:</b> SAS requires optional PCI Controller.
	Optical Drive	Optional
	Power Supply	Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant
	Form Factor	Rack (1U), (1.70 in/4.32 cm)

Country Code Key	xx=00	North America
	xx=29	Japan
	xx=37	APD (Asia excluding Japan)
	xx=42	EURO (Europe / Middle East / Africa)
	xx=AA	PRC

Configuration Information - Factory Integrated Models

**NOTE:** This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.

**NOTE:** HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.

**NOTE:** This product offering does not support HP Factory Express Server Configuration Level 1.

**NOTE:** FIO indicates that this option only available as a Factory Installable Option.

Step 1: Base Configuration (choose one of the following configurable models)

Models	DL320G5p CTO (Configure-To-Order) Chassis	445436-B21
	<b>Includes:</b>	
	Embedded NC326i Dual Port Gigabit Server Adapter	
	1 full length PCI Express x8 slot and 1 half length low profile PCI Express x8 slot	
	Integrated Lights-Out 2 (iLO 2) embedded (shared NIC functionality standard)	
	Intel® 82801IR Integrated Serial ATA Host Controller	
	Rack (1U) form factor, (1.70 in/4.32 cm)	
	Fixed, mounting rails	

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

Processors	Intel® Celeron 420 processor FIO Kit	450125-L21
	Intel® Celeron 440 processor FIO Kit	468963-L21
	Dual-Core Intel® Pentium E2160 Processor FIO Kit	455035-L21
	Dual-Core Intel® Core E4400 processor FIO Kit	455033-L21
	Dual-Core Intel® Core E4600 processor FIO Kit	482110-L21
	Dual-Core Intel® Xeon® 3065 processor FIO Kit	450143-L21
	Dual-Core Intel® Xeon® 3075 processor FIO Kit	450127-L21
	Dual-Core Intel® Xeon® E3110 processor FIO Kit	463436-L21
	Quad-Core Intel® Xeon® X3210 processor FIO Kit	455031-L21
	Quad-Core Intel® Xeon® X3220 processor FIO Kit	450141-L21
	Quad-Core Intel® Xeon® X3320 processor FIO Kit	463434-L21
	Quad-Core Intel® Xeon® X3350 processor FIO Kit	463432-L21
	Quad-Core Intel® Xeon® X3360 processor FIO Kit	489909-L21
Drive Cage	DL1U 2 DRV CAGE FIO Kit	450436-B21
	DL1U 4 DRV CAGE FIO Kit	450434-B21
Memory	2 GB Unbuffered PC2-6400 ECC DIMM (1 x 2 GB)	450260-B21
	1 GB Unbuffered PC2-6400 ECC DIMM (1 x 1 GB)	450259-B21
	512 MB Unbuffered PC2-6400 ECC DIMM (1 x 512 MB)	450258-B21



Configuration Information - Factory Integrated Models

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

SAS HBAs	HP SC44Ge Host Bus Adapter	416096-B21
	HP 8 Internal Port SAS HBA with RAID	347786-B21
	<b>NOTE:</b> Any SAS HBA CTO purchase automatically includes the HP HBA SAS-SATA 4x1LN Cable Kit (452130-B21).	
Controllers	HP Smart Array E200/128 BBWC Controller	411508-B21
	HP Smart Array P400/256MB Controller	405132-B21
	HP Smart Array P400/512MB BBWC Controller	411064-B21
	HP Smart Array E500/256MB Controller	435129-B21
	HP Smart Array P800/512MB BBWC Controller	381513-B21
	<b>NOTE:</b> Any Smart Array Controller CTO purchase automatically includes the HP HBA SAS-SATA 4x1LN Cable Kit (452130-B21).	

Options

**NOTE:** Some options may not be factory integratable. Contact your local sales representative for additional information.

ProLiant DL320 G5p Unique Options	DL320G5p DVD Drive 9.5mm	450432-B21
	<b>NOTE:</b> Only supported on 4HDD models.	
	DL320G5p CD-RW/DVD-ROM Combo Drive 9.5mm	451688-B21
	<b>NOTE:</b> Only supported on 4HDD models.	
	DL320G5p DVD-ROM Drive 12.7mm	449991-B21
	<b>NOTE:</b> Only supported on 2HDD models.	
	DL320G5p DVD-RW Drive 12.7mm	449998-B21
	<b>NOTE:</b> Only supported on 2HDD models.	
	DL320G5p PCI-X RISER BD	450341-B21
	DL320G5p iLO2 PORT OPT KIT	450343-B21
	<b>NOTE:</b> For dedicated port functionality.	
	DL1U 4 DRV CAGE KIT	450434-B21

HP Insight Control  
Management Suites

**NOTE:** Electronic licensing options are available for Insight Control suites software products. Please see the appropriate Insight Control QuickSpecs for additional information.

HP Insight Control Environment

HP Insight Control Environment, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates	452148-B22
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**NOTE:** This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. Only available directly from HP and select resellers in the Americas region.

HP Insight Control Management Software Media Kit	436222-B21
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**NOTE:** Insight Control Management DVD media without licenses. Contains Insight Manager and Essentials software products and components licensed by Insight Control Management suites. Uses an integrated installer to perform quick and accurate software installation and updates.

**NOTE:** For additional License Kits, please see the QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/12631\\_div/12631\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html)

HP Insight Control Environment for Linux	
HP Insight Control Environment for Linux v2.0, Media pack (CD) - No licenses included	464422-B21

**NOTE:** This optional Media pack CD contains the ISO image for HP Insight Control Environment for Linux, HP System Insight Manager, and an integrated installer. Servers must be acquired separately. This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: <http://www.hp.com/go/ice-linux> (click on Download button).

HP Insight Control Environment for Linux v2.0, No Media, 1-Server license, including One year of 24x7 Technical Support and Updates	464423-B21
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**NOTE:** This part number can be used to purchase one (1) license with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. One certificate is shipped for each license.

**NOTE:** For additional License Kits, please see the QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/13019\\_div/13019\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html)



Options

Server Management  
Stand Alone Software  
Product - ProLiant  
Essentials

**NOTE:** Electronic licensing options are available for select ProLiant Essentials software products. Please see the appropriate ProLiant Essentials QuickSpecs for additional information.

Deploy

ProLiant Essentials Rapid Deployment Pack

ProLiant Essentials Rapid Deployment Pack No Media 1-Server License 452151-B21  
including 1 year of 24x7 Technical Support and Updates

**NOTE:** This license allows 1 server to be deployed and managed via RDP. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service

**NOTE:** For additional License Kits, please see the QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/11053\\_div/11053\\_div.html](http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.html)

HP Server Migration Pack - Universal Edition

HP Server Migration Pack - Universal Edition, No Media, Physical / Virtual to ProLiant Single Migration License, including 1 year of 24x7 Technical Support and Updates 460750-B21

**NOTE:** This license allows 1 physical to ProLiant or virtual to ProLiant migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

HP Server Migration Pack - Universal Edition, No Media, Physical / Virtual to Virtual Single Migration License, including 1 year of 24x7 Technical Support and Updates 460753-B21

**NOTE:** This license allows 1 physical to virtual or virtual to virtual migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

HP Server Migration Pack - Universal Edition, No Media, 1-Year Unlimited Migration License, including 1 year of 24x7 Technical Support 460756-B21

**NOTE:** This license allows unlimited migrations (physical to ProLiant, physical to virtual, virtual to virtual, and virtual to ProLiant) for one year. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

**NOTE:** For additional License Kits, please see the QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/12855\\_div/12855\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12855_div/12855_div.html)

Control

Integrated Lights-Out Select Pack

ProLiant Essentials Integrated Lights-Out Select Pack, No Media, 1-Server License 452158-B21

**NOTE:** For additional License Kits, please see the QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/12362\\_div/12362\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html)

Integrated Lights-Out Advanced Pack

Integrated Lights-Out Advanced Pack, No Media ,1 Server License 452141-B21

**NOTE:** For additional License Kits, please see the QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/10861\\_div/10861\\_div.html](http://h18000.www1.hp.com/products/quickspecs/10861_div/10861_div.html)

Optimize

ProLiant Essentials Virtual Machine Management Pack

ProLiant Essentials Virtual Machine Management Pack, No Media, 1-Server 452153-B21



Options

License, including 1 year of 24x7 Technical Support and Updates  
**NOTE:** Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.  
**NOTE:** For additional License Kits, please see the QuickSpecs at:  
[http://h18000.www1.hp.com/products/quickspecs/12328\\_div/12328\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.html)  
**NOTE:** Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to: <http://www.hp.com/servers/proliantessentials> or the various ProLiant Essentials QuickSpecs for more information.

Memory (DIMMs)	2 GB Unbuffered PC2-6400 ECC DIMM (1 x 2 GB)	450260-B21
	1 GB Unbuffered PC2-6400 ECC DIMM (1 x 1 GB)	450259-B21
	512 MB Unbuffered PC2-6400 ECC DIMM (1 x 512 MB)	450258-B21
Port Options	Internal USB Kit	451363-B21
	Serial/Parallel Port OPT KIT	401222-B21
Optical Drives	DL320G5p DVD Drive 9.5mm <b>NOTE:</b> Only supported on 4HDD models.	450432-B21
	DL320G5p CD-RW/DVD-ROM Combo Drive 9.5mm <b>NOTE:</b> Only supported on 4HDD models.	451688-B21
	DL320G5p DVD-ROM Drive 12.7mm <b>NOTE:</b> Only supported on 2HDD models.	449991-B21
	DL320G5p DVD-RW Drive 12.7mm <b>NOTE:</b> Only supported on 2HDD models.	449998-B21
Hard Drives	<b>Hot Plug SAS 3.5" Drives</b>	
	HP 300GB 3G SAS 15K 3.5" SP HDD	431944-B21
	HP 300GB 3G SAS 15K 3.5" DP HDD	416127-B21
	HP 146GB 3G SAS 15K 3.5" SP HDD	375872-B21
	HP 146GB 3G SAS 15K 3.5" DP HDD	384854-B21
	HP 72GB 3G SAS 15K 3.5" SP HDD	375870-B21
	HP 72GB 3G SAS 15K 3.5" DP HDD	384852-B21
	<b>NOTE:</b> Serial Attached SCSI - SAS Hard Drives are only supported with optional SAS HBA or RAID cards.	
	<b>NOTE:</b> Please see the Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: <a href="http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html">http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html</a> (Worldwide)	
	<b>3.5" SATA Hot Plug Drives</b>	
	HP 750GB 1.5G SATA 7.2K 3.5" HDD	432341-B21
	HP 500GB 1.5G SATA 7.2K 3.5" HDD	395473-B21
	HP 250GB 1.5G SATA 7.2K 3.5" HDD	349239-B21
	HP 160GB 1.5G SATA 7.2K 3.5" HDD	349238-B21
	HP 80GB 1.5G SATA 7.2K 3.5" HDD	349237-B21
	<b>NOTE:</b> Serial ATA hot-plug capability and drive LEDs are not supported by the DL320 G5p embedded SATA storage controller.	

Options

**NOTE:** SATA drives have a 1 year warranty. Please see the QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:  
[http://h18000.www1.hp.com/products/quickspecs/11940\\_div/11940\\_div.html](http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.html)  
(Worldwide)

Storage Controllers

SAS Controllers

Smart Array E200 Controller

**NOTE:** The HP Smart Array E200 Controllers require the purchase of the HP HBA SAS-SATA 4x1LN Cable Kit (PN: 452130-B21).

HP Smart Array E200/128 BBWC Controller 411508-B21

128-MB BBWC (Battery-Backed Write Cache) Enabler 351580-B21

**NOTE:** Supports the Smart Array E200 Controller, Smart Array 641 Controller, Smart Array 642 Controller.

Smart Array E500 Controller

HP Smart Array E500/256MB Controller 435129-B21

Smart Array P400 Controller

**NOTE:** The HP Smart Array P400 Controllers require the purchase of the HP HBA SAS-SATA 4x1LN Cable Kit (452130-B21).

HP Smart Array P400/256MB Controller 405132-B21

HP Smart Array P400/512MB BBWC Controller 411064-B21

Smart Array P400 Battery Attach Kit 417836-B21

**NOTE:** This option kit contains a 24" battery cable and adhesive material for installing a battery into the server if a Smart Array P400 is integrated outside of the factory. For all solutions, please refer to the server QuickSpecs and User's Manual for detailed installation instructions.

Battery-backed write cache upgrade 383280-B21

**NOTE:** Battery only. For Smart Array P400 Controller only.

512MB Battery-backed write cache upgrade 405148-B21

**NOTE:** For Smart Array P400 Controller only.

HP ProLiant P800 Controller

HP Smart Array P800/512MB BBWC Controller 381513-B21

**NOTE:** Please see the following QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/12460\\_div/12460\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12460_div/12460_div.html)  
(Smart Array E200 Controller)

[http://h18000.www1.hp.com/products/quickspecs/12700\\_div/12700\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12700_div/12700_div.html)  
(Smart Array E500 Controller)

[http://h18000.www1.hp.com/products/quickspecs/12400\\_div/12400\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12400_div/12400_div.html)  
(Smart Array P400 Controller)

[http://h18000.www1.hp.com/products/quickspecs/12616\\_div/12616\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html)  
(Smart Array P800 Controller)

SAS HBA

HP SC44Ge Host Bus Adapter 416096-B21

HP 8 Internal Port SAS HBA with RAID 347786-B21

**NOTE:** The HP SC44Ge HBA and HP 8 Internal Port SAS HBA with RAID require the purchase of the HP HBA SAS-SATA 4x1LN Cable Kit (452130-B21).

HP HBA SAS-SATA 4x1LN Cable Kit 452130-B21

**NOTE:** This option is required for any internal port HBA or controller that has a standard 4 port SAS/SATA connector.

Options

<b>NOTE:</b> Please see the following QuickSpecs for Technical Specifications and additional information: <a href="http://h18004.www1.hp.com/products/quickspecs/12617_div/12617_div.html">http://h18004.www1.hp.com/products/quickspecs/12617_div/12617_div.html</a> (SC44Ge HBA) <a href="http://h18000.www1.hp.com/products/quickspecs/12332_div/12332_div.html">http://h18000.www1.hp.com/products/quickspecs/12332_div/12332_div.html</a> (8 Internal Port SAS HBA)		
<b>SCSI Controllers</b>		
<b>NOTE:</b> The HP ProLiant DL320 G5p PCI-X Option Kit is required for all PCI-X Controllers.		
Smart Array 6404/256 Controller		273914-B21
<b>NOTE:</b> For External drive support only		
Smart Array 6402/128 Controller		273915-B21
<b>NOTE:</b> For External drive support only		
Smart Array 642 Controller		291967-B21
<b>NOTE:</b> For External drive support only		
128-MB BBWC (Battery-Backed Write Cache) Enabler		351580-B21
<b>NOTE:</b> Supports the Smart Array E200 Controller, Smart Array 641 Controller, Smart Array 642 Controller.		
64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2		374654-B21
<b>NOTE:</b> For External drive support only		
<b>SCSI HBA</b>		
HP SC11Xe Host Bus Adapter		412911-B21
<b>NOTE:</b> Please see the following QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/11587_div/11587_div.html">http://h18000.www1.hp.com/products/quickspecs/11587_div/11587_div.html</a> (Smart Array 6400 Series) <a href="http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.html">http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.html</a> (Smart Array 642) <a href="http://h18000.www1.hp.com/products/quickspecs/11943_div/11943_div.html">http://h18000.www1.hp.com/products/quickspecs/11943_div/11943_div.html</a> (HP Single Channel Ultra320 SCSI HBA) <a href="http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html">http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html</a> (SC11Xe HBA)		

Communications	HP NC110T PCI Express Gigabit Server Adapter	434905-B21
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
	HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
	HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
	HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter	394795-B21

Tape Drives

<b>NOTE:</b> For the complete listing of Tape Drive offerings, please see: <a href="http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html">http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html</a>		
For recommended tape drive offerings for this ProLiant server see the following:		
<b>USB Tape Drives</b>		
HP StorageWorks 1U USB Rack-Mount Kit with one DAT 160 USB Tape Drive		AG703A
<b>SAS Tape Drives</b>		
<b>NOTE:</b> For the DL320 G5p, HP recommends purchasing the HP SC44Ge HBA (416096-B21) for a dedicated SAS HBA for tape.		
HP StorageWorks DAT 160 SAS Internal Tape Drive		Q1587A
<b>NOTE:</b> HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.		





Options

HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive	DW085A
<b>NOTE:</b> HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.	
HP LTO-3 Ultrium 920 SAS Internal Tape Drive	EH978A
<b>NOTE:</b> HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution.	
HP StorageWorks 1U SAS Rack-mount kit with one LTO-4 Ultrium 1760	EH946A
<b>NOTE:</b> Please refer to the "Tape Drives, Tape Autoloaders & Tape Libraries" table in the Storage section of this document for a list of SAS controllers with tape support.	
<b>SCSI Tape Drives</b>	
<b>NOTE:</b> For the DL320 G5p, HP recommends purchasing the HP SC11Xe HBA (412911-B21) for a dedicated SCSI HBA for tape.	
HP StorageWorks LTO-1 Ultrium 232 Internal Tape Drive (Carbonite)	DW064A
<b>NOTE:</b> HP recommends combining this tape drive with the 1U SCSI Rack-Mount kit (A7445B) for a complete rack-mount solution.	
HP StorageWorks 1U SCSI Rack-mount kit with one LTO-2 Ultrium 448 (Carbonite)	DW028B
HP StorageWorks 1U SCSI Rack-mount kit with one LTO-3 Ultrium 920	EH903A
<b>NOTE:</b> Please see the HP StorageWorks Ultrium Tape Drive QuickSpecs for additional options such as controllers, media, and other related items: <a href="http://h18006.www1.hp.com/products/quickspecs/11739_div/11739_div.html">http://h18006.www1.hp.com/products/quickspecs/11739_div/11739_div.html</a> (Worldwide) <a href="http://h18006.www1.hp.com/products/quickspecs/12128_div/12128_div.html">http://h18006.www1.hp.com/products/quickspecs/12128_div/12128_div.html</a> (Worldwide) For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a>	
<b>Rack-Mount Tape Drive Enclosures</b>	
HP StorageWorks 1U SCSI Rack-Mount Kit	A7445B
<b>NOTE:</b> The 1U Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 40, DAT 72, DAT 160, DLT VS160, Ultrium 232, Ultrium 448 and Ultrium 920 tape drives.	
HP StorageWorks 1U USB Rack-Mount Kit	A8007A
<b>NOTE:</b> The 1U USB Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the DAT 40 USB, DAT 72 USB and DAT 160 USB tape drives.	
HP StorageWorks 1U SAS Rack-Mount Kit	AE459A
<b>NOTE:</b> The 1U SAS Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the LTO-2 Ultrium 448 SAS, LTO-3 Ultrium 920 SAS and LTO-4 Ultrium 1760 SAS tape drives.	
<b>NOTE:</b> Please see the Rack-Mount Tape Drive Kits QuickSpecs for additional information regarding these kits: <a href="http://h18000.www1.hp.com/products/quickspecs/10854_div/10854_div.html">http://h18000.www1.hp.com/products/quickspecs/10854_div/10854_div.html</a> (Worldwide)	



Options

HP D2D Backup System	HP StorageWorks D2D110 Backup System	EH880A
	<b>NOTE:</b> 1TB of Disk Storage.	
	HP StorageWorks D2D110 Backup System with Data Protector Express Software Kit	EH923A
	<b>NOTE:</b> 1TB of Disk Storage.	
	HP StorageWorks D2D120 Backup System	EH884A
	<b>NOTE:</b> 2TB of Disk Storage.	
	HP StorageWorks D2D120 Backup System with Data Protector Express Software Kit	EH924A
	<b>NOTE:</b> 2TB of Disk Storage.	
	HP StorageWorks D2D130 Backup System	EH950A
	<b>NOTE:</b> 3TB of Disk Storage.	
	HP StorageWorks D2D130 Backup System with Data Protector Express Software Kit	EH951A
	<b>NOTE:</b> 3TB of Disk Storage.	
	HP StorageWorks D2D130 Backup System with LTO-3 Ultrium 920 SAS Tape Drive	EH952A
	<b>NOTE:</b> 3TB of Disk Storage.	
	<b>NOTE:</b> Please see the HP D2D Backup Systems QuickSpecs for additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/12651_div/12651_div.html">http://h18000.www1.hp.com/products/quickspecs/12651_div/12651_div.html</a>	

Tape Autoloaders	<b>HP StorageWorks DAT Autoloader</b>	
	HP StorageWorks DAT 72x10 tape autoloader	AE313B
	<b>HP StorageWorks 1/8 Tape Autoloader</b>	
	HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader	AK377A
	HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 Tape Autoloader	AH165A
	HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader	AH558A
	HP StorageWorks 1/8 G2 LTO-2 Ultrium 448 Tape Autoloader	AH164A
	HP StorageWorks 1/8 G2 LTO-1 Ultrium 232 Tape Autoloader	AH163A
	HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit	AH166A
	<b>NOTE:</b> Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions	
	<b>NOTE:</b> Please reference the Tape Autoloader QuickSpecs at: <a href="http://www.hp.com/go/automation">http://www.hp.com/go/automation</a> for additional information needed to create a complete solution.	

Options

Tape Libraries	<b>HP StorageWorks MSL2024 Tape Library</b>	
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ033A
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 4GB FC Library	AJ034A
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library	AK378A
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 960 SCSI Drive Library	AG115A
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 960 4GB FC Library	AG326B
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library	AH559A
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SCSI Drive Library	AH169A
	HP StorageWorks MSL2024 1 LTO-2 Ultrium 448 SCSI Drive Library	AG116A
	<b>HP StorageWorks MSL4048 Tape Library</b>	
	HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 SCSI Drive Library	AJ035A
	HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 4GB FC Library	AJ036A
	HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library	AK380A
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 960 SCSI Drive Library	AG322A
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 960 4GB FC Library	AG324B
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 920 SAS Drive Library	AH560A
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 920 SCSI Drive Library	AH171A
	HP StorageWorks MSL4048 1 LTO-2 Ultrium 448 SCSI Drive Library	AG320A
	<b>NOTE:</b> Please reference the MSL Tape Library QuickSpecs at: <a href="http://www.hp.com/go/automation">http://www.hp.com/go/automation</a> for additional information needed to create a complete solution; reference current compatibility information at: <a href="http://www.hp.com/go/ebs">http://www.hp.com/go/ebs</a> .	

High Availability Cluster Options	<b>HP Serviceguard for Linux</b>	
	HP Serviceguard Linux x86 Server License & Media including One Year 24x7 Software Support & Updates	463831-B21
	HP Serviceguard Linux Oracle Single Instance Database Toolkit x86 Cluster License & Media including One Year 24x7 Software Support & Updates	463833-B21
	HP Serviceguard Linux Extension for SAP (SGeSAP/LX) x86 Server License & Media including One Year 24x7 Software Support & Updates	463834-B21
	HP Serviceguard Linux Extended Distance Cluster (XDC) x86 Server License & Media including One Year 24x7 Software Support & Updates	463835-B21
	<b>NOTE:</b> For a detailed list of supported configuration/certification options for HP Serviceguard for Linux please refer to the HP Serviceguard for Linux Certification Matrix at: <a href="http://www.hp.com/go/sglx/info">http://www.hp.com/go/sglx/info</a> .	
	<b>NOTE:</b> HP Serviceguard for Linux products running on x86 platforms now include one year of 24 x 7 Software Technical Support and Updates. Please see the Support Information section of the HP Serviceguard for Linux QuickSpecs for details.	
	<b>NOTE:</b> For additional information including a complete list of Product Numbers for HP Serviceguard for Linux, please see the following QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html">http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html</a> (Worldwide)	

Options

HP StorageWorks Modular Smart Array 20	<div>HP StorageWorks Modular Smart Array 20</div> <div><b>NOTE:</b> Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies.</div> <div><b>NOTE:</b> Please see the Modular Smart Array 20 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: <a href="http://h18000.www1.hp.com/products/quickspecs/11942_div/11942_div.html">http://h18000.www1.hp.com/products/quickspecs/11942_div/11942_div.html</a> (Worldwide)</div>	335921-B21
HP StorageWorks Modular Smart Array 30	<div>HP StorageWorks Modular Smart Array 30 SB</div> <div><b>NOTE:</b> Rack-mountable 14 drive enclosure with single bus, redundant power supplies</div> <div>HP StorageWorks Modular Smart Array 30 DB</div> <div><b>NOTE:</b> Rack-mountable 14 drive enclosure with dual bus, redundant power supplies</div> <div><b>NOTE:</b> Please see the Modular Smart Array 30 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: <a href="http://h18000.www1.hp.com/products/quickspecs/11738_div/11738_div.html">http://h18000.www1.hp.com/products/quickspecs/11738_div/11738_div.html</a> (Worldwide)</div>	<div>302969-B21</div> <div>302970-B21</div>
HP StorageWorks Modular Smart Array 60	<div>HP StorageWorks 60 Modular Smart Array Enclosure</div> <div><b>NOTE:</b> Please see the Modular Smart Array 60 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: <a href="http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html">http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html</a></div>	418408-B21
HP StorageWorks Modular Smart Array 70	<div>HP StorageWorks 70 Modular Smart Array Enclosure</div> <div><b>NOTE:</b> Please see the Modular Smart Array 70 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: <a href="http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html">http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html</a></div>	418800-B21
HP StorageWorks Modular Smart Array 500	<div>HP StorageWorks Modular Smart Array 500 Generation 2</div> <div><b>NOTE:</b> Please see the Modular Smart Array 500 Generation 2 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: <a href="http://h18000.www1.hp.com/products/quickspecs/11956_div/11956_div.html">http://h18000.www1.hp.com/products/quickspecs/11956_div/11956_div.html</a> (Worldwide)</div>	335880-B21

Options

StorageWorks Options	<b>NOTE:</b> The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: <a href="http://h18006.www1.hp.com/storage/saninfrastructure/hba.html">http://h18006.www1.hp.com/storage/saninfrastructure/hba.html</a>	
	HP StorageWorks FC2142SR 4Gb PCI-e HBA	A8002A
	HP StorageWorks FC2242SR Dual Channel 4 Gb PCI-e HBA	A8003A
	HP StorageWorks FC1142SR 4Gb PCI-e HBA	AE311A
	HP StorageWorks FC1242SR Dual Channel 4 Gb PCI-e HBA	AE312A
	HP StorageWorks FC2143 4Gb PCI-X 2.0 -to-Fibre Channel HBA	AD167A
	HP StorageWorks FC2243 Dual Channel 4Gb PCI-X 2.0 HBA	AD168A
	HP StorageWorks FC1143 4Gb PCI-X 2.0 HBA	AB429A
	HP StorageWorks FC1243 Dual Channel 4Gb PCI-X 2.0 HBA	AE369A
	HP StorageWorks 8 Gb Simple SAN Connection Kit	AK241A
	HP StorageWorks 8/20q Fibre Channel Switch	AK242A

Uninterruptible Power Systems – Rack UPS	HP, R1.5kVA UPS, 1U, NA	AF419A
	HP, R1.5kVA UPS, 1U, INTL	AF418A
	HP, R1.5kVA UPS, 1U, JPN/TW	AF421A
	HP R3000 VA UPS, 2U, DTC, INTL	AF414A
	HP R3000 VA UPS, 2U, L5-30, NA	AF422A
	HP R3000 VA UPS, 2U, L6-20, NA	AF423A
	HP R3000 VA UPS, 2U, L6-20, JPN	AF424A
	HP R3000 VA UPS, 2U, L5-30, JPN	AF425A
	HP R5500 VA UPS, INTL	AF416A
	HP R5500 VA UPS, NA/JPN	AF426A

USB Options	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B
	HP 1GB USB 2.0 Floppy Drive Key	442085-B21
	HP 256MB USB 2.0 Floppy Drive Key	442084-B21

ProLiant DL320 Deployment Options	Rack Adapter Kit	332815-B21
	<b>NOTE:</b> This kit allows HP rack servers to fit in racks that are 24" wide.	

HP Rack 5000 Series (Metallic Carbonite)	HP 5642 Rack-Unassembled	358254-B21
	<b>NOTE:</b> Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: <a href="http://h18000.www1.hp.com/products/quickspecs/12074_div/12074_div.html">http://h18000.www1.hp.com/products/quickspecs/12074_div/12074_div.html</a> (Worldwide)	
	<b>NOTE:</b> For additional information regarding Rack Cabinets, please see the following URL: <a href="http://www.hp.com/go/rackandpower">http://www.hp.com/go/rackandpower</a> .	

Options

HP Rack 10000 G2 Series (Graphite Metallic)	10642 G2 (42U) Rack Cabinet – Pallet	AF001A
	10642 G2 (42U) Rack Cabinet – Shock Pallet	AF002A
	10642 G2 (42U) Rack Cabinet – Crated	AF003A
	10642 G2 (42U) Rack Cabinet, with Extension – Shock Pallet	AF004A
	10636 G2 (36U) Rack Cabinet – Pallet	AF011A
	10636 G2 (36U) Rack Cabinet – Shock Pallet	AF012A
	10636 G2 (36U) Rack Cabinet – Crated	AF013A
	10636 G2 (36U) Rack Cabinet, with Extension – Shock Pallet	AF014A
	10622 G2 (22U) Rack Cabinet - Pallet	AF021A
	10622 G2 (22U) Rack Cabinet - Shock Pallet	AF022A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Pallet	AF041A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Shock Pallet	AF042A
	10647 G2 (47U) Rack Cabinet - Pallet	AF031A
	<b>NOTE:</b> Please see the Rack 10000 G2 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: <a href="http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.html">http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.html</a> (Worldwide)	
	<b>NOTE:</b> For additional information regarding Rack Cabinets, please see the following URL: <a href="http://www.hp.com/go/rackandpower">http://www.hp.com/go/rackandpower</a> .	

HP Rack 10000 Series (Graphite Metallic)	HP S10614 (14U) Rack Cabinet – Shock Pallet	292302-B22
	<b>NOTE:</b> xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels).	
	<b>NOTE:</b> It is mandatory to use a shock pallet in order to ship racks with equipment installed.	
	<b>NOTE:</b> Please see the Rack 10000 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: <a href="http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.html">http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.html</a> (Worldwide)	
	<b>NOTE:</b> For additional information regarding Rack Cabinets, please see the following URL: <a href="http://www.hp.com/go/rackandpower">http://www.hp.com/go/rackandpower</a> .	

Monitors and Keyboards	TFT7210R Rack Mounted 17" Monitor	348373-B21
	TFT7600 Rackmount Keyboard Monitor US	AG052A
	TFT7600 Rackmount Keyboard Monitor UK	AG053A
	TFT7600 Rackmount Keyboard Monitor GR	AG054A
	TFT7600 Rackmount Keyboard Monitor FR	AG055A
	TFT7600 Rackmount Keyboard Monitor IT	AG056A
	TFT7600 Rackmount Keyboard Monitor SP	AG057A
	TFT7600 Rackmount Keyboard Monitor DEN	AG058A
	TFT7600 Rackmount Keyboard Monitor NOR	AG059A
	TFT7600 Rackmount Keyboard Monitor SE/FI	AG060A
	TFT7600 Rackmount Keyboard Monitor SWI	AG061A
	TFT7600 Rackmount Keyboard Monitor PORT	AG062A
	TFT7600 Rackmount Keyboard Monitor BEL	AG063A
	TFT7600 Rackmount Keyboard Monitor JPN2	AG064A
	TFT7600 Rackmount Keyboard Monitor RUS	AG065A
	TFT7600 Rackmount Keyboard Monitor INTL	AG066A



Options

1U Rackmount Keyboard with USB, US	AG072A
1U Rackmount Keyboard with USB, UK	AG073A
1U Rackmount Keyboard with USB, GR	AG074A
1U Rackmount Keyboard with USB, FR	AG075A
1U Rackmount Keyboard with USB, ITL	AG076A
1U Rackmount Keyboard with USB, SP	AG077A
1U Rackmount Keyboard with USB, DEN	AG078A
1U Rackmount Keyboard with USB, NOR	AG079A
1U Rackmount Keyboard with USB, SE/FI	AG080A
1U Rackmount Keyboard with USB, SWI	AG081A
1U Rackmount Keyboard with USB, PORT	AG082A
1U Rackmount Keyboard with USB, BEL	AG083A
1U Rackmount Keyboard with USB, JPN2	AG084A
1U Rackmount Keyboard with USB, RUS	AG085A
1U Rackmount Keyboard with USB, INTL	AG086A

**NOTE:** For additional information regarding Rack Options, please see the following URL: <http://www.hp.com/go/rackandpower>.

HP KVM Switch Options

2x1x16 IP Console Switch with Virtual Media	AF601A
4x1x16 IP Console Switch with Virtual Media	AF602A
PS/2 Virtual Media Interface Adapter, 1 pack	AF604A
<b>NOTE:</b> Requires PS/2 and one USB port on server.	
Server Console Switch (KVM), 0 x 1 x 8 port	336044-B21
Server Console Switch (KVM), 0 x 2 x 16 port	336045-B21
PS/2 Interface Adapter, 1 pack	262588-B21
PS/2 Interface Adapter, 8 pack	262587-B21
USB Interface Adapter, 1 pack	336047-B21
Serial Interface adapter – 1 Pack with power supply	373035-B21
<b>NOTE:</b> Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .	
HP 1x4 Console Switch	AF611A
PS2 Server Console Cable, 6 ft, 2 pack	AF612A
USB Server Console Cable, 6 ft, 2 pack	AF613A

**NOTE:** For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <http://www.hp.com/go/kvm>.



Options

HP Serial Console Server Options	HP 16 Port Serial Console Server (worldwide)	AF101A
	HP 48 Port Serial Console Server (worldwide)	AF102A
	Serial Adapter, RJ45-DB9 DCE Female, 1 Pack	AF103A
	Serial Adapter, RJ45-DB9 DCE Female, 8 Pack	AF110A
<b>NOTE:</b> Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .		
<b>NOTE:</b> For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .		

Service and Support Offerings (HP Care Pack Services)	<b>Hardware Services On-site Service</b>	
	Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	U4479E
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	U4480E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4481E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4482E
	<b>Installation &amp; Start-up Services</b>	
	Hardware Installation, Electronic	U4490E
	Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays, Electronic	U4491E
	<b>Support Plus</b>	
	Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic	U4492E
	<b>Support Plus 24</b>	
	Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U4493E
	Onsite HW support 24x7, 4hr response and SuSE Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic.	U6309E
	Onsite HW support 24x7, 4hr response and Red Hat ES Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic.	U8331E
	<b>NOTE:</b> For more information, customer/resellers can contact: <a href="http://www.hp.com/hps/">http://www.hp.com/hps/</a>	



Memory

HP ProLiant DL320 G5p

Standard Memory

**NOTE:** One of the following depending on model:  
1 GB installed (1 x 1 GB SDRAM DIMM) on Dual-Core (3075 and E3110) models.  
2 GB installed (2 x 1 GB SDRAM DIMMs) on Quad-Core (X3320 and X3210) models.

Standard Memory Plus Optional Memory

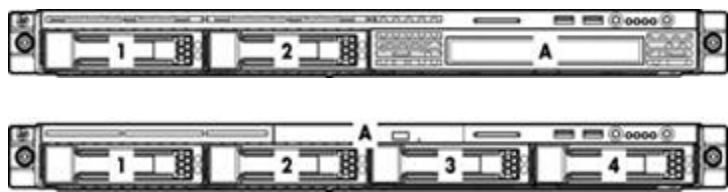
Up to 8 GB memory is available with the optional installation of PC2-6400 ECC DDR2 SDRAM Memory kits.  
**NOTE:** The chart below does not represent all possible configurations. For best performance, HP recommends dual-bank interleaved mode configurations. For dual-bank interleaved mode, DIMMs must be installed in both banks with equal bank capacities.

Memory		Slot				
		1A	2B	3A	4B	Mode
Optional	512 MB	512 MB	Empty	Empty	Empty	Single-bank
Standard	1 GB	1 GB	Empty	Empty	Empty	Single-bank
Optional	1 GB	512 MB	Empty	512 MB	Empty	Single-bank interleaved
Standard	2 GB	1 GB	Empty	1 GB	Empty	Single-bank interleaved
Maximum	8 GB	2 GB	2 GB	2 GB	2 GB	Dual-bank interleaved

Following are memory options available from HP:

2 GB Unbuffered PC2-6400 ECC DIMM (1 x 2 GB)	450260-B21
1 GB Unbuffered PC2-6400 ECC DIMM (1 x 1 GB)	450259-B21
512 MB Unbuffered PC2-6400 ECC DIMM (1 x 512 MB)	450258-B21

Storage



- 1- 2 Two SATA or SAS drive bays
- A Optical Drive Bay: Optional 12.7mm DVD-ROM, or DVD-RW drive
- 1- 4 Four SATA or SAS drive bays
- A Optical Drive Bay: Optional 9.5mm DVD-ROM, or DVD-ROM/CD-RW Combo drive

Drive Support

	Quantity Supported	Position Supported	Controller
<b>Removable Media</b>			
2 Drive Models: 12.7mm IDE DVD-ROM or DVD-RW Drive	Up to 1	A	HP embedded SATA Controller
4 Drive Models: 9.5mm IDE DVD-ROM or DVD-ROM/CD-RW Combo Drive	Up to 1	A	HP embedded SATA Controller

Hot Plug SAS 3.5" Drives

	Quantity Supported	Position Supported	Controller
HP 300GB 3G SAS 15K SP	Up to 2	1-2	HP SC44Ge Host Bus Adapter
HP 300GB 3G SAS 15K DP	Up to 4	1-4	HP 8 Internal Port SAS HBA with RAID
HP 146GB 3G SAS 15K SP	NOTE: depending on model.	NOTE: depending on model.	HP Smart Array E200/128 BBWC Controller
HP 146GB 3G SAS 15K DP			HP Smart Array P400/256MB Controller
HP 72GB 3G SAS 15K SP			HP Smart Array P400/512MB BBWC Controller
HP 72GB 3G SAS 15K DP			HP Smart Array P800/512MB BBWC Controller

3.5" SATA Hot Plug Drives

	Quantity Supported	Position Supported	Controller
HP 750GB 1.5G SATA 7.2K	Up to 2	1-2	HP embedded 4 Port SATA Controller with RAID 0/1 support
HP 500GB 1.5G SATA 7.2K	Up to 4	1-4	HP SC44Ge Host Bus Adapter
HP 250GB 1.5G SATA 7.2K	NOTE: depending on model.	NOTE: depending on model.	HP 8 Internal Port SAS HBA with RAID
HP 160GB 1.5G SATA 7.2K			HP Smart Array E200/128 BBWC Controller
HP 80GB 1.5G SATA 7.2K			HP Smart Array P400/256MB Controller
			HP Smart Array P400/512MB BBWC Controller
			HP Smart Array P800/512MB BBWC Controller

Storage

SATA Hot Plug Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1TB 1.5G SATA 7.2K 3.5" MDL	Up to 2	1-2	HP SC44Ge Host Bus Adapter
750GB 1.5G SATA 7.2K 3.5" MDL	Up to 4	1-4	HP 8 Internal Port SAS HBA with RAID
500GB 1.5G SATA 7.2K 3.5" MDL	<b>NOTE:</b> depending on model.	<b>NOTE:</b> depending on model.	HP Smart Array E200/128 BBWC Controller
250GB 1.5G SATA 7.2K 3.5" MDL			HP Smart Array P400/256MB Controller
			HP Smart Array P400/512MB BBWC Controller
			HP Smart Array P800/512MB BBWC Controller

SATA Hot Plug Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
160GB 1.5G SATA 7.2K 3.5" ETY	Up to 4	1-4	HP SC44Ge Host Bus Adapter
			HP 8 Internal Port SAS HBA with RAID
			HP Smart Array E200/128 BBWC Controller
			HP Smart Array P400/256MB Controller
			HP Smart Array P400/512MB BBWC Controller
			HP Smart Array P800/512MB BBWC Controller

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 20	Please see the Modular Smart Array 20 QuickSpecs to determine configuration requirements	External	Please see the Modular Smart Array 1000 QuickSpecs for the latest list of supported HBAs: <a href="http://www.hp.com/go/MSA20">http://www.hp.com/go/MSA20</a> .
Modular Smart Array 30 Family	Up to 14	External	Smart Array 6402/128 Controller Smart Array 642 Controller
Modular Smart Array 60 Enclosure	Up to 8	External	HP Smart Array P800/512 BBWC Controller HP Smart Array E500/256MB Controller
Modular Smart Array 70 Enclosure	Up to 4	External	HP Smart Array P800/512 BBWC Controller HP Smart Array E500/256MB Controller
Modular Smart Array 500 G2	1	External	Please see the Modular Smart Array 500 QuickSpecs for the latest list of supported HBAs: <a href="http://www.hp.com/go/msa500">http://www.hp.com/go/msa500</a>

Maximum Storage Capacity – (SAS drives)

Internal	600GB (2 x 300GB SAS)
External	4.20TB (1 x (14 x 300GB SAS))
Total	4.80TB

**NOTE:** In order to implement integrated SATA RAID with Smart Start 7.90 on Windows 2000/2003, the use of a floppy drive is necessary.

Storage

Maximum Storage Capacity – (SATA Drives)

Internal	4TB (4 x 1TB SATA)
External	12TB [1 x (12 x 1TB SATA)]
Total	16TB

**NOTE:** In order to implement integrated SATA RAID with Smart Start 7.90 on Windows 2000/2003, the use of a floppy drive is necessary.

**NOTE:** The External capacity section relates to the HP StorageWorks Modular Smart Array 20.

Tape Drives, Tape Autoloaders, Tape Libraries & D2D Backup

**NOTE:** For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following: <http://h18000.www1.hp.com/products/quickspecs/division/10233.html> (Worldwide)

**NOTE:** For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders and Tape Libraries listed below, please see the following: <http://h18000.www1.hp.com/products/quickspecs/division/10809.html> (Worldwide)

**NOTE:** For complete listing of tape drive offerings see:  
<http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html>

**NOTE:** SAS Tape Drives: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.

	Position Supported	Controller	Controller Part Number
<b>HP StorageWorks SCSI Tape Drives, External</b> LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter	412911-B21
<b>HP StorageWorks USB Tape Drives, External</b> DAT 40 USB DAT 72 USB DAT 160 USB 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
<b>HP StorageWorks SAS Tape Drives, External</b> DAT 160 SAS LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS LTO-4 Ultrium 1760 SAS LTO-4 Ultrium 1840 SAS 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC44Ge Host Bus Adapter	416096-B21



Storage

<b>HP StorageWorks SCSI Tape Automation, External</b> DAT 72x10 Autoloader 1/8 G2 Tape Autoloader MSL2024 MSL4048 MSL8096 MSL6000	External	HP SC11Xe Host Bus Adapter  HP U320e SCSI Host Bus Adapter <b>NOTE:</b> Recommended for MSL tape libraries.	412911-B21  AH627A
<b>HP StorageWorks SAS Tape Automation, External</b> 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096	External	HP SC44Ge Host Bus Adapter	416096-B21
<b>HP StorageWorks Fibre Tape Automation, External</b> MSL2024 MSL4048 MSL8096 MSL6000	External	Please consult the EBS connectivity matrix at: <a href="http://www.hp.com/go/ebs">http://www.hp.com/go/ebs</a> for detailed connectivity information.	N/A
<b>HP StorageWorks D2D Backup Systems</b> D2D110 D2D120 D2D130	External	Embedded Network Controller	N/A

Technical Specifications

System Unit	Dimensions (H x W x D) 1.70 x 17.64 x 26.85 in (4.32 x 44.80 x 68.19 cm) (with bezel)	
	Weight (approximate)	Maximum (four hard drives, power supply, and processor installed) 33.50 lb (15.20kg)
		Minimum (one hard drive, power supply, and processor installed) 26.00lb (11.79kg)
	Input Requirements (per power supply)	Range Line Voltage 90 - 132 VAC, 180 - 264 VAC
		Rated Input Current 6 A (at 100 VAC), 3 A (at 200 VAC)
		Rated Input Frequency 47 to 63 Hz
		Rated Input Power 486 W (at 100 VAC), 479 W (at 200 VAC)
	BTU Rating	Maximum 1836 BTU/hr (at 100 VAC), 1706 BTU/hr (at 200 VAC)
	Power Specifications To review typical system power ratings use the Power Calculator which is available via the online tool located at URL: <a href="http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls">http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls</a>  - Click on the system of interest. Example: DL320 G5p - Follow the instructions of the next screens.	
	Power Supply Output (per power supply)	Rated Steady-State Power 400 W (at 100 VAC), 400 W (at 200 VAC)
		Maximum Peak Power 400 W (at 100 VAC), 400 W (at 200 VAC)
System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Technical Specifications

		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
<b>Acoustic Noise</b>		Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
		Idle	
		LWAd	6.30 B
		LpAm	52.07dBA
		Operating	
		LWAd	6.38 B
		LpAm	52.77 dBA
<b>Power Supply</b>	<b>Input voltage specifications</b>	Rated input voltage	100 VAC to 240 VAC
		Rated input line	90 VAC to 264VAC
		Frequency range	47 to 63 Hz
	<b>Input Specifications</b>	Rated input power	@ 115V input, Rated input power = 486W (assume output wattage=450W) @ 230V input, Rated input power = 479W (assume output wattage=450W)
		Rated input current	6 A, 3 A (110 V, 220 V)
		Steady state power	420W (rated)
	<b>BTU Rating</b>	1710 BTU/hr	
	<b>Ambient temperature range</b>	Operating	50° to 118° F (10° to 48° C)
		Non-operating	-40° to 158° F (-40° to 70° C)
	<b>Relative humidity</b> (non-condensing)	Operating	55% to 85%
		Non-operating	5% to 95%
	<b>Dielectric voltage withstand</b>	Input to output	1800 VAC/minute
		Input to ground	1800 VAC/minute
	<b>Maximum Wet Bulb Temperature</b>	106.3° F (41.3° C)	



Technical Specifications

Integrated Serial ATA Controller	Simultaneous drive transfer channels	4 channels		
	Transfer rate synchronous (maximum theoretical)	150 MB/s per channel; 300 MB/s in RAID 0 pair		
	Data transfer method	Intel® 82801IR Integrated Serial ATA Host Controller (non-RAID mode) Intel® 82801IR Integrated Serial ATA Host Controller (RAID Mode)		
	Drive support	Serial ATA		
	Data transfer modes	Legacy Mode Combined Mode		
	Protocol	Serial ATA		
	Feature	NCQ (Native Command Queuing); AHCI (Advanced Host Controller Interface)		
	RAID levels supported	0, 1		
	RAID Features	Supports multiple logical volumes Setup through ROM based Array Configuration Utility Installation scripting support <b>NOTE:</b> This controller does not support Hot Plug functions or LED functions.		
	RAID OS Support	Microsoft Windows Server 2003 <b>NOTE:</b> In order to implement integrated SATA RAID with Smart Start 7.90 on Windows 2000/2003, the use of a floppy drive is necessary. Linux (Red Hat, SuSE, UnitedLinux)		
	<hr/>			
	Embedded NC326i Dual Network Interface Port Gigabit Server Adapter	Compatibility		10Base-T/ 100Base-TX/ 1000Base-TX  IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T  IEEE 802.3u 100Base-TX
Data Transfer Method		Four lane (x4), 100MHz PCI Express Reference Clock		
Network Transfer Rate		10Base-T (Half-Duplex)	10 Mb/s	
		10Base-T (Full-Duplex)	20 Mb/s	
		100Base-TX (Half-Duplex)	100 Mb/s	
		100Base-TX (Full-Duplex)	200 Mb/s	
		1000Base-TX (Half and Full-Duplex)	2000 Mb/s	
Connector		RJ-45		
Cable Support		10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)	
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)	
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Technical Specifications

**Environment-friendly  
Products and  
Approach**

**End-of-life  
Management and  
Recycling**

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.